Cancer Incidence Projections to 2035 in Northern Ireland

Donnelly, D., & Gavin, A. (2015). Cancer Incidence Projections to 2035 in Northern Ireland. Poster session presented at National Cancer Intelligence Network: Cancer Outcomes Conference 2015: United Against Cancer, Belfast , United Kingdom.DOI: 10.1111/ecc.12330

Cancer incidence trends 1993-2013 with projections to 2035

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Acknowledgements
The NI Cancer Registry is funded by the Public Health Agency

Monitoring trends in cancer incidence is essential if high quality cancer services are to be maintained and resourced. Trends for all cancers (excluding NMSC) along with the most common cancers are analysed in detail. Additionally projections of cancer incidence up to the year 2035 are presented for the first time in Northern Ireland.

The full report is available at www.qub.ac.uk/nicr

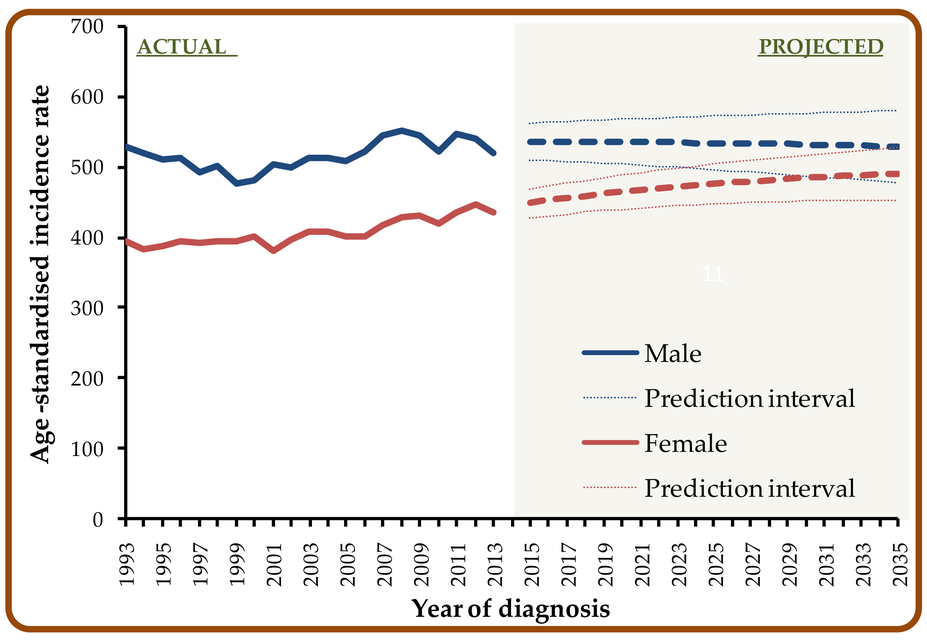
Methods

Data on all cancers (excluding NMSC) diagnosed during1993-2013 was extracted from the NI Cancer Registry. Age-specific rates for all cancers combined and 30 common cancers were determined for both sexes by year of diagnosis. The data was fitted separately for ages 0-49, 50-59, 60-69, 70-79 and 80+ using a regression model with five-year age group, five-year birth cohort and year of diagnosis used as predictors of the cancer incidence rate. The resulting model was used to predict rates in future years, which were combined with population projections to provide estimates of the future number of cases.

Projected incidence rates from 2015 to 2035

Incidence rates of cancer among men are projected to remain steady in future years with no change by 2020, while by 2035 a slight drop of 1% is expected.

Among women incidence rates are projected to increase, with a 7% rise by 2020 and a 13% rise by 2035 expected.

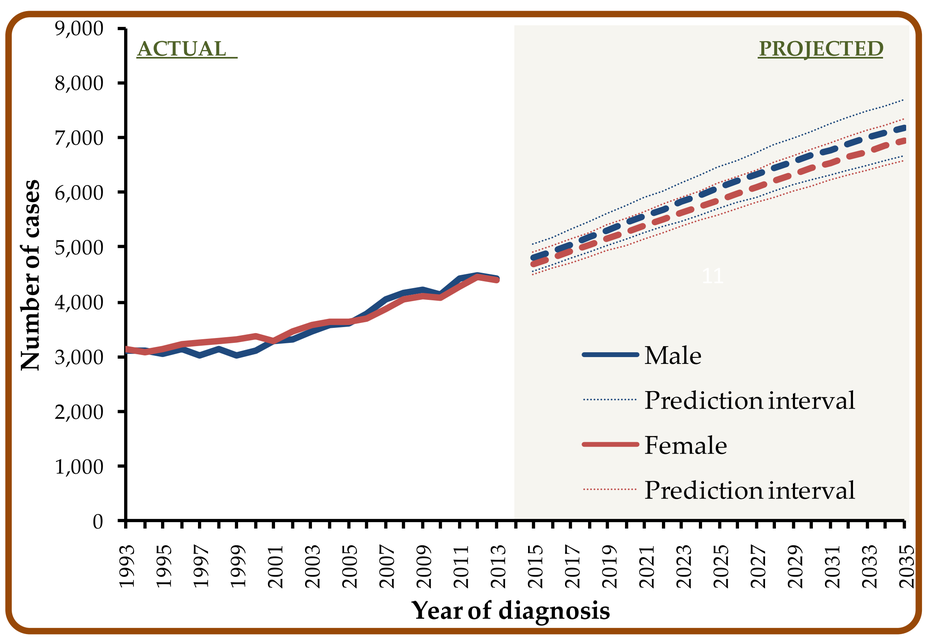


Projected number of cases diagnosed from 2015 to 2035

In 2009-2013 there were 4,347 male and 4,275 female cases of cancer (ex. NMSC) diagnosed each year.

By 2020 the number of cases is expected to rise by 25% for men and by 24% for women to 5,443 male and 5,285 female cases.

By 2035 the number of cases is expected to rise by 65% for men and by 63% for women to 7,181 male and 6,967 females cases.



Factors that can influence incidence projections

Changes to risk factor exposure within the general population.
Risk factors likely to have the greatest impact on future projections are:

- Tobacco use;
- Excessive alcohol consumption;
- Obesity, lack of physical activity and/or lack of a balanced diet;
- Ultraviolet radiation from sunshine or sun beds.

Introduction of health service initiatives that aim to either prevent or diagnose cancer early.
These include vaccinations (e.g. the HPV vaccination), screening (e.g. the breast, cervical and colorectal screening programmes) and diagnostic tests (e.g. PSA testing for prostate cancer).

Changes to cancer classification or revisions to population projections.

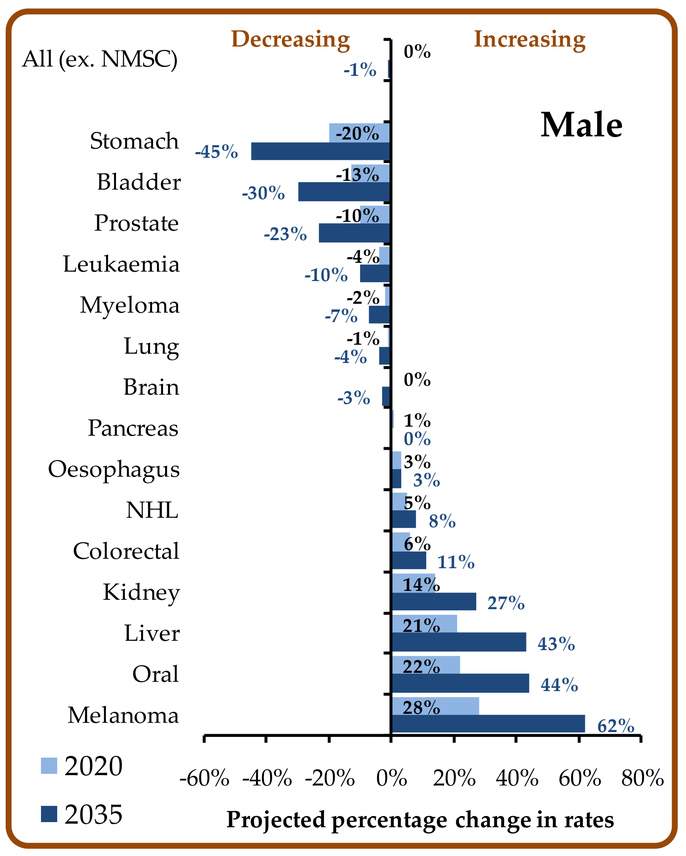
Projected change in incidence rates by sex and type

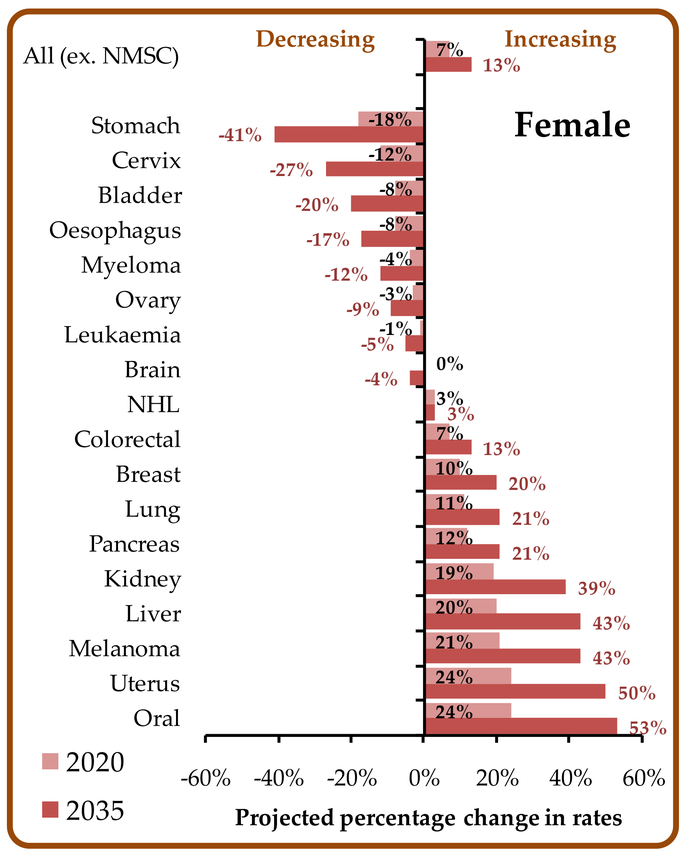
Compared to the 2009-2013 average male incidence rates are projected to:

- **decrease** by more than 20% by 2035 for stomach, bladder and prostate cancers,
- **increase** by more than 20% by 2035 for melanoma, oral, liver and kidney cancers.

Also compared to the 2009-2013 average female incidence rates are projected to:

- **decrease** by more than 20% by 2035 for stomach and cervical cancers;
- **increase** by more than 20% by 2035 for melanoma, oral, uterine, liver, kidney, pancreatic, lung and breast cancer.





Projected number of cases diagnosed by sex and type in 2020 and 2035

The number of cases diagnosed each year is projected to increase for all cancer types, except for stomach cancer, and cervical cancer.

By 2035 case volume is expected to more than double for liver, kidney and oral cancers, for female uterine and pancreatic cancers and for male melanoma.

Cancer type	Male					Female				
	2009-13 cases per year	2020 Cases per year (prediction interval)		2035 Cases per year (prediction interval)		2009-13 cases per year	2020 Cases per year (prediction interval)		2035 Cases per year (prediction interval)	
All (ex. NMSC)	4,425	5,443	(5140, 5746)	7,181	(6675, 7687)	4,351	5,285	(5050, 5520)	6,967	(6590, 7344)
Bladder	150	169	(128, 210)	205	(162, 248)	61	67	(47, 87)	83	(62, 104)
Brain	81	94	(67, 121)	110	(76, 144)	55	63	(42, 84)	75	(49, 101)
Breast						1,268	1,589	(1464, 1714)	2,077	(1888, 2266)
Cervix						103	93	(56, 130)	74	(26, 122)
Colorectal	680	909	(807, 1011)	1,292	(1143, 1441)	545	688	(605, 771)	946	(818, 1074)
Kidney	173	244	(195, 293)	368	(294, 442)	115	161	(124, 198)	246	(189, 303)
Leukaemia	116	137	(101, 173)	170	(128, 212)	80	91	(66, 116)	116	(88, 144)
Liver	72	110	(77, 143)	179	(125, 233)	31	43	(24, 62)	67	(33, 101)
Lung	649	816	(717, 915)	1,128	(991, 1265)	484	641	(570, 712)	923	(821, 1025)
Melanoma	138	215	(168, 262)	370	(288, 452)	181	239	(193, 285)	317	(244, 390)
NHL	175	226	(182, 270)	316	(257, 375)	150	180	(146, 214)	232	(191, 273)
Oesophagus	127	163	(124, 202)	215	(165, 265)	65	72	(52, 92)	86	(63, 109)
Oral	140	204	(157, 251)	288	(204, 372)	73	103	(73, 133)	146	(96, 196)
Ovary						158	178	(143, 213)	223	(183, 263)
Pancreas	105	135	(98, 172)	185	(139, 231)	116	156	(125, 187)	241	(198, 284)
Prostate	1,039	1,183	(1040, 1326)	1,294	(1082, 1506)					
Stomach	141	143	(107, 179)	140	(106, 174)	81	78	(56, 100)	76	(56, 96)
Uterus						238	343	(286, 400)	506	(411, 601)

NHL: Non-Hodgkin's lymphoma, NMSC: Non-melanoma skin cancer

Conclusion: The increasing number of cancer cases will result in an increased burden on health services. However the largest increases are projected for cancers such as melanoma that are largely preventable. The opportunity thus exists to reduce the projected increase through preventative measures.